Disonycha limbicollis, 30 specimens, *Limonius auripilis*, 8 specimens, and *Lixus concavus*, 8 specimens, were found on June 8 and 13 on a species of *Rumex*.

Batyle suturalis and *Centrinus scutellum-album* are common on Ox-eye Daisy (*Leucanthemum vulgare*); the latter species and *Rhipiphorus dimidiatus* and *cruentatus* occur on *Nepeta cataria*.

The flowers of *Viburnum prunifolium* yield *Molorchus*, *Sericosomus*, *Agriotes*, *Attalus scincetus*, *Anaspis flavipennis*, and species of many other genera.

Mr. Smith, referring to the note on *Helops*, said that he had never found them except under the bark of trees. *Valgus* he has found very local on Long Island; a single patch of woods only yielding any number of specimens. He described their location in the stumps of trees, and the season at which they were found.

Mr. Schwarz said that his experience agreed with that of Mr. Sherman regarding *Helops;* he has found them under stones near the base of trees. He added that it is strange that no one has succeeded in finding the larva of *Helops* in our country, common as it must be.

Mr. Schwarz read the following:

Notes on the Food Habits of some North American Scolytidæ and their Coleopterous Enemies.

By E. A. Schwarz.

Pityophthorus concentralis Eichhoff, originally described from Cuba, must be added to our fauna, since it occurs abundantly throughout the semi-tropical region of Florida on the Poison wood (*Rhus metopium.*) It is closely allied to *P. consimilis*, but at once distinguished by the sharply raised concentric lines on the anterior part of the thorax. Its work may be briefly described as follows: By the co-operation of several parent beetles a large central chamber of irregular outline is excavated under the thin bark of the trunk or larger branches of the tree. Several (from two to five), more or less, undulating primary galleries, of not great length, radiate from this chamber, and the eggs are deposited singly in little indentations either on one side or on both sides of these galleries during the process of excavation. The larval galleries are short, either diverging in the usual way or frequently intersecting each other, or even reverting to the central chamber. The pupal chamber is not sunk into the wood.

In the middle of June, 1887, I found on Mr. Hubbard's Prairie Farm, near Hawk Creek, Volusia Co., Fla., a prostrate tree of Black Gum (*Liquidambar styraciflua*), which had been felled in October the previous year. Upon beating the branches into my umbrella I found numerous specimens of two Scolytids, *Pityophthorus pulicarius* and another species of the same

genus, which, upon subsequent comparison, I fail to distinguish from *P. annectens.** The former of these is an easily recognized species known to infest Pine trees, and its occurrence on Liquidambar could not fail to attract my attention. Wishing to ascertain the life-history of this, as well as of *P. annectens*, I carried some infested branches with me to Washington for further investigation. I did not breed a single specimen of *P. pulicarius*, nor did I find any trace of its galleries under the bark, and feel confident, therefore, that this species does not breed on Liquidambar, and that the specimens only visited the tree for feeding purposes. Of *P. annectens* I obtained, in the course of the subsequent month, several hundred specimens from the branches. Its work closely resembles that of *P. concentralis*, but the primary and larval galleries are longer, owing, no doubt, to the softer nature of the wood.

In July of the present year an immense colony of *Pityophthorus consimilis* was found near Washington, D. C., infesting the dead and dying branches of a large specimen of *Rhus toxicodendron*, which had been torn down by a storm in August, 1887. That this species infests *Rhus glabra* has been pointed out by me on a previous occasion (see p. 17), but I had not before known it to live in the Poison Ivy. Its primary galleries also start from a central chamber, but usually follow, more or less, the longitudinal axis of the vine, rarely going around the twig. The species is evidently very prolific, and the larval galleries crowd and intersect each other so often that the whole bark in the vicinity of the central chamber is completely undermined, and the individual larval galleries cannot longer be distinguished When full-grown the larvæ enter a little more the solid wood to undergo their transformation. Pieces of infested vines were, for several months, under my observation, and thousands of beetles emerged, and some are still emerging up to the present day.

Although I had twigs of Liquidambar and vines of Poison Ivy infested with Pityophthorus for several months in my room I never obtained a single hymenopterous parasite therefrom, but I had occasion to observe some coleopterous enemies of these Scolytids. *Læmophlœus* (*Dysmerus*) *basalis* occurred occasionally in the galleries of *P. concentralis* in southern Florida. I obtained it also in some numbers from Liquidambar twigs infested by *P. annectens*, and in great numbers from the vines of *Rhus toxi-*

*The species was described by Dr. LeConte from specimens found by me many years ago at Tampa, Fla., on the Yellow Pine (*Pinus palustris*). The specimens were only beaten from the trees, which does not indicate that they breed under pine bark. From what we know at present of the life-history of our Pityophthorus, it seems hardly probable that the same species infests Conifers and, at the same time, deciduous trees. It is possible that we have to do here with two different species. From a letter by Dr. LeConte, published in Bull. No. 7 of the U. S. Entom. Comm., pp. 260–261, it appears that Dr. Packard also obtained *P. annectens* from a deciduous tree, but, unfortunately, the name of the tree is not mentioned.

codendron infested by *P. consimilis*. Here I succeeded also in finding its larva within the galleries of the Scolytid. From the Liquidambar twigs I obtained further a small number of the rare *Narthecius grandiceps*, and from the vines of *Rhus toxicodendron* a few specimens of *Læmophlœus angustulus*, which species was also bred some years since by Mr. H. G. Hubbard from twigs of *Rhus glabra* infested by *P. consimilis*. The three Cucujids just mentioned have a rather cylindrical form of body, and I am inclined to believe that their larvæ will only be found within the galleries of bark-boring Scolytids, whereas most of the species of *Læmophlœus* with flattened body, *e. g.*, *L. testaceus*, *biguttatus*, etc., are not enemies of Scolytids, but probably prey upon dipterous and other coleopterous larvæ living under loosened bark. A single specimen of *Scalidia lincaris*, found dead in the galleries of *P. concentralis* in southeastern Florida, might indicate that the larva of this species is preying on those of Scolytid. The larva of *Nemosoma cylindricum* was frequently found in the galleries of *P. consimilis*, and is a very efficient enemy of this, and no doubt also of other Scolytids infesting deciduous trees. No *Histeridæ* were found in the galleries of the three *Pityophthorus* mentioned above, though our species of *Cylistix*, and the more cylindrical species of *Platysoma* and their larvæ, are common enough in the galleries of pine-infesting Scolytids. Our species of *Hypophlœus* seem also to prey only on Scolytids infesting Conifers. Some genera of *Cleridæ*, both in the imago and larval states, are well known as enemies of Scolytidæ; the pretty *Clerus ichneumoneus* could frequently be seen on the trunks of *Rhus metopium* watching for the *Pityophthorus* and snapping them off as soon as they emerged from their holes, and a large Clerid larva found in the galleries probably belongs to that species. From the twigs infested by *P. annectens* and *consimilis* I bred numerous specimens of *Phyllobœnus dislocatus*, but did not observe the larva.

An accidental, but nevertheless very efficient, enemy of *P. annectens* proved to be a Cerambycid larva, viz., that of *Leptostylus aculifer*, which was quite common in the Liquidambar branches. The burrows of this *Leptostylus* are very broad when compared with the diameter of the larva, and are preferably constructed right through the colonies of the Scolytids, completely obliterating their galleries and crushing the Scolytid larvæ and pupæ. I have since observed that the larvæ of allied Cerambycids (*Leptostylus macula* and *Hyperplatys aspersus*), which I found in Hickory twigs inhabited by *Thysanoës fimbricornis*, have also the habit of running their galleries over those of the Scolytid, for the reason, I suppose, that on such places the bark has become somewhat loosened from the wood, thus facilitating the burrowing on the part of the Cerambycid larva.

Dr. Marx gave an account of a "List of the families Theridiidæ, Thomisidæ, and Agalenidæ, found in the District of Columbia."